



MAS BULLETIN

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GY-90 Fiber Optic Gyro

Background. Elettronica San Giorgio ELSAG S.p.A., Genoa, Italy, has developed a fiber optic gyro (FOG) for use on short range missiles and torpedoes, and in fire control systems.

Description. The FOG is based on the Sagnac effect. When two counterpropagating beams of light are subjected to an angular rotation in their planes, that motion causes one of the beams to transit slightly greater path length than the other. This creates a shift in the relative phase of the two beams, proportional to rotation rate.

The accuracy of the Sagnac effect is proportional to the length of the optical path and an extremely long optical path can be achieved in a small size by using a many-turn coil of optical fiber.

There are no moving parts and thus virtually no maintenance. The FOG has a very short run-up and warm-up time. It is all solid state, is insensitive to accelerations, and has a wide dynamic and frequency range.

The GY-90 is designed to meet the environmental standards of MIL-STD 810.

Performance

Dynamic range	.....	± 400°/sec
Accuracy	.....	40°/h
Scale Factor Error	.....	0.5 %
Bandwidth	.....	400 hz
Noise	.....	5°/h $\sqrt{\text{Hz}}$
Bias	.....	5°/h
Drift ($\gamma = 10$ s)	.....	2.5°/h

For further information contact Elettronica San Giorgio ELSAG S.p.A., Naval Systems Division, Via G. Puccini, 2-16154 Genoa, Italy. Telephone 39 10/60011, Fax 39 10/607329, Telex 270660/213847 ELSAG 1.

ONREUR point of contact: CDR R. H. Taylor, USN, Under-sea Systems Officer.

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